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Corruption and Economic Growth Nexus: Empirical Insight from Sierra Leone

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Abstract

This study explores the impact of corruption on economic growth in Sierra Leone, a country grappling with post-conflict recovery and institutional challenges. Using time series secondary data from the World Development Indicators (1996–2024), the research applies econometric techniques, including the ARDL and SUR models, to analyze both short-term and long-term relationships between corruption indices and key economic indicators such as GDP. Stationarity tests ensure data reliability, and the models reveal that higher corruption levels significantly hinder economic growth by discouraging investment, distorting resource allocation, and undermining governance. The findings underscore the urgent need for strengthening institutional frameworks, implementing anti-corruption reforms, and enhancing governance to foster sustainable economic development. This study contributes empirical evidence to inform policymakers aiming to combat corruption and promote economic stability in Sierra Leone.

Keywords: *Corruption, Economic Growth, Sierra Leone, Rule of Law, Political Stability.*

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1. Introduction

Corruption remains a pervasive and damaging obstacle to economic growth and development, particularly in developing economies. This complex phenomenon affects the political, economic, and social fabric of nations, hindering progress in key areas such as infrastructure development, public service delivery, and the overall business environment (Gupta et al., 2002). Extensive research has sought to understand the relationship between corruption and economic growth, a concern central to policymakers, economists, and international organizations. Sierra Leone, located in West Africa, presents a unique case study due to its historical challenges with corruption and a complex economic landscape shaped by its post-conflict recovery process (UNDP, 2014).

Sierra Leone's economy has faced significant challenges, including a devastating civil war (1991–2002), political instability, and the Ebola outbreak in 2014. Despite these setbacks, the country has demonstrated resilience in recent years as it seeks to rebuild its economy and strengthen its institutions. The role of corruption in influencing this recovery and the broader economic

trajectory of Sierra Leone has been widely debated. While corruption is often blamed for exacerbating economic challenges, some argue that it may be a symptom of deeper institutional weaknesses rather than a primary driver of underdevelopment (Lambsdorff, 2006).

The nexus between corruption and economic growth is multifaceted and not always straightforward. In some contexts, corruption has been found to act as a 'grease' for the wheels of business, enabling individuals and firms to navigate bureaucratic inefficiencies (Leff, 1964). Conversely, it can also function as 'sand' in the machinery of the economy, undermining institutions, distorting market incentives, and diverting resources away from productive investments (Mauro, 1995). Therefore, understanding the precise impact of corruption on Sierra Leone's economic growth requires a careful analysis of both direct and indirect effects, as well as an examination of how corruption interacts with other structural factors, including governance, the rule of law, and public sector efficiency. In Sierra Leone, corruption manifests in various forms, including bribery, embezzlement, favoritism in government procurement, and misallocation of public resources Rožič, P., & Nisnevich, Y. A. (2016). These corrupt practices are pervasive across several sectors, including public administration, healthcare, education, and the extractive industries, all critical to the economy. Despite the country's abundant natural resources diamonds, gold, and bauxite Sierra Leone has struggled to capitalize on these assets to foster sustained economic growth. Corruption has significantly limited the impact of these resources on the broader economy, contributing to mismanagement, inefficient resource allocation, and a lack of transparency in revenue generation (Gberie, 2005).

The international community recognizes corruption as a major impediment to achieving sustainable economic growth in Sierra Leone. In 2003, the country signed a governance agreement with the International Monetary Fund (IMF) and the World Bank, committing to economic reforms that included anti-corruption measures. Despite these efforts, corruption remains deeply ingrained, with public officials often lacking the political will or capacity to implement meaningful reforms (World Bank, 2012). Public perception of corruption is high, translating into a lack of trust in government institutions and further exacerbating economic stagnation by discouraging both domestic and foreign investments (Transparency International, 2017). Some scholars argue that while corruption may be detrimental to economic growth in the long run, it can have short-term effects that are less clearly negative. For instance, in environments with weak institutional structures, individuals may engage in corrupt activities to circumvent bureaucratic hurdles, leading to increased economic activity in the informal sector. This "informal economy" can sustain certain livelihoods and business operations that would otherwise be stifled by inefficient public administration (Svensson, 2005). Given the complexities surrounding the relationship between corruption and economic growth, the need for focused empirical analysis of Sierra Leone is evident. Previous studies have primarily addressed broader regional or cross-country analyses, with limited attention to specific national contexts like Sierra Leone (Meon & Weill, 2010). This study aims to bridge that gap by providing empirical insights into how corruption affects Sierra Leone's economic growth, considering both short-term and long-term implications. It will also explore the role of governance, institutional quality, and external factors, such as foreign aid and international trade, in shaping the impact of corruption on economic performance. Furthermore, this study aims to provide insights and policy recommendations for promoting long-term economic development in Sierra Leone by analyzing key forms of corruption, their effects on investment, and their correlation with GDP. The research objectives include exploring the relationship between corruption levels and economic growth, identifying prevalent forms of corruption and their impacts on economic indicators, assessing the effect of corruption on foreign direct investment (FDI) and domestic businesses, quantifying the correlation between corruption indices and GDP growth over time, and comparing Sierra Leone's economic growth with that of other regional countries, while addressing specific corruption impacts across sectors. Therefore, this study will draw upon data from World Development Indicators, Sierra Leone's national statistics, international indices on corruption and governance,

and case studies from key sectors of the economy. It will consider historical, cultural, and institutional factors contributing to the persistence of corruption, offering policy recommendations aimed at improving governance and promoting sustainable economic growth. Ultimately, understanding the dynamics of corruption and its impact on economic growth is essential for developing strategies that can help Sierra Leone overcome one of its most significant developmental challenges and move towards a more prosperous and stable future (Bardhan, 1997).

Sierra Leone is chosen as a case study for examining the corruption and economic growth nexus due to its unique historical and socio-economic context. The country has faced significant challenges, including a brutal civil war that devastated its economy and institutions, providing a backdrop for analyzing how corruption has evolved in post-conflict recovery. Additionally, Sierra Leone consistently ranks low on global corruption indices, highlighting pervasive corruption across various sectors, which allows for an in-depth investigation of its impact on economic growth. Moreover, the country is rich in natural resources like diamonds and minerals, yet mismanagement and corruption in these sectors have often thwarted potential economic benefits, exemplifying the resource curse. The economy's heavy reliance on agriculture and minerals also makes it vulnerable to external shocks, emphasizing the need to understand the interplay between corruption and economic stability. By studying Sierra Leone, researchers can draw valuable lessons relevant to other post-conflict nations facing similar challenges, ultimately informing policy recommendations aimed at fostering economic growth through effective anti-corruption measures.

The informal sector plays a significant role in Sierra Leone's economy and has a complex relationship with corruption and growth. Often characterized by unregulated and unregistered activities, the informal sector can both mitigate and exacerbate corruption. On one hand, it provides livelihoods for many who are excluded from the formal economy, contributing to overall economic activity. On the other hand, the lack of regulation can foster environments where corruption thrives, as informal businesses may evade taxes and operate outside legal frameworks, reducing government revenues and hindering growth. This duality highlights the need for policies that recognize the informal sector's contributions while addressing the corruption that can arise from its unregulated nature, ultimately promoting a more sustainable economic environment. Political events in Sierra Leone significantly affect data reliability, especially regarding corruption and economic growth (Koroma et al., 2024). Changes in government, such as elections or coups, can alter data collection priorities and methods, leading to potential manipulation or suppression of information. Increased corruption often accompanies political instability, with officials skewing data to present a more favorable image. Civil unrest can disrupt data collection processes, making it challenging to obtain accurate information. Rapid policy shifts during transitions may further compromise the reliability of economic indicators. Additionally, political dynamics can impact relationships with international organizations, limiting access to credible data. While scrutiny during political change can improve data practices, it can also lead to manipulation to satisfy public and international expectations. Overall, the political landscape in Sierra Leone shapes the context of data collection, affecting its integrity and the conclusions drawn from it.

2. Literature Review

This review explores the complex relationship between corruption and economic growth, with a focus on developing economies. By examining key theoretical perspectives and empirical findings, it highlights how corruption influences governance, investment, and resource allocation. The review provides a comprehensive understanding of the mechanisms through which corruption affects economic performance, drawing insights from global case studies and specific country contexts.

2.1 Theoretical Arguments

Several theoretical frameworks have been developed to understand the relationship between corruption and economic growth, each offering unique insights into how corruption operates and its broader implications for economies. Principal-Agent Theory suggests that corruption occurs when agents, typically government officials, exploit their positions for personal gain, leading to a divergence between their interests and those of the public. This misalignment causes resources to be diverted from essential services like education and healthcare, undermining governance and public spending effectiveness. The lack of accountability fosters uncertainty, deterring businesses from investing. As potential investors withhold capital or seek opportunities elsewhere, economic growth and innovation are stifled, resulting in job losses and diminished opportunities, ultimately creating a vicious cycle of stagnation (Mauro, 1995).

Institutional Theory emphasizes that corruption undermines the effectiveness of institutions which govern societal interactions. High corruption levels lead to weak governance, characterized by a lack of accountability and transparency. Compromised institutions struggle to enforce laws, weakening the rule of law and fostering further corrupt practices. Public service delivery suffers when resources for essential services, like healthcare and education, are misappropriated. For instance, funds intended for schools or hospitals may be siphoned off, leading to inadequate facilities and ultimately impacting citizens' quality of life and access to essential services. Corruption creates significant barriers to economic growth by fostering instability and inefficiency. Businesses face increased operational costs and risks in corrupt environments, deterring both domestic and foreign investment due to fears of bribery and regulatory unpredictability. Additionally, neglected essential services and unreliable infrastructure hinder productivity, leading to lower economic output and growth. Thus, institutional theory demonstrates how corruption diverts resources and perpetuates inefficiency, stifling economic development and exacerbating social inequalities (Pillay & Kluvers, 2014).

Public Choice Theory applies economic principles to political decision-making, suggesting that politicians and bureaucrats act in their self-interest, similar to individuals in the marketplace. This framework argues that corruption arises when individuals in power exploit their positions for personal gain, often at the expense of public welfare. It emphasizes the need for institutional reforms that create incentives for public officials to act in the public interest rather than pursue corrupt activities (Buchanan & Tollison, 1984). Game Theory can also be applied to understand corruption as a strategic interaction among stakeholders, including public officials, businesses, and citizens. It analyzes how individuals make decisions based on the actions and incentives of others. If corrupt practices are perceived as the norm, individuals may engage in corruption to remain competitive. Understanding these dynamics can enable policymakers to design interventions that alter the incentives and strategies of involved parties, promoting honest behavior (Macrae, J. 1982). These frameworks collectively illustrate how corruption distorts economic landscapes, undermines governance, and impedes growth, highlighting the necessity for effective anti-corruption strategies.

2.2 Empirical Evidence

Empirical studies generally indicate a negative correlation between corruption and economic growth. (Mauro, 1995) found that higher levels of corruption are associated with lower rates of investment and economic growth. His analysis demonstrated that corruption leads to a misallocation of resources, discouraging both domestic and foreign investment, which in turn stifles economic development. This finding has been corroborated by numerous studies across various countries and regions, reinforcing the notion that corruption acts as a significant barrier to economic progress. Koroma et al. (2024) highlights that corruption significantly impairs local government administrations' ability to deliver services, causing resource misallocation and hindering economic growth in the Bonthe District Council.

To illustrate, D'Agostino, Dunne, and Pieroni (2016) analyzed data from African nations and concluded that corruption significantly hampers economic growth, particularly in countries with weak governance structures. Their research highlighted that in environments where institutions are fragile, the negative impacts of corruption are exacerbated, leading to diminished public service delivery and increased inefficiencies in the allocation of resources. This underscores the importance of strong governance and institutional integrity in mitigating the adverse effects of corruption on economic growth. A study examining 16 sub-Saharan African countries, including Sierra Leone, from 2000 to 2021, found that corruption control leads to positive economic growth. The study suggests that maintaining fiscal discipline is crucial for macroeconomic stability and improved economic performance (Nwagu, 2024). In contrast, some researchers argue that the relationship between corruption and economic growth may not be uniformly negative. Aidt et al. (2008) suggest that in certain contexts, corruption could function as a "grease" for the wheels of the economy, facilitating transactions and reducing bureaucratic inefficiencies. This perspective posits that in environments where red tape is prevalent, corruption might expedite processes and enable businesses to navigate complex regulatory landscapes more effectively. However, this view is often criticized for overlooking the long-term detrimental effects of corruption, which can ultimately undermine institutional quality and economic stability. Wen et al. (2023) argue that inadequate governance creates fertile ground for corrupt practices, leading to reduced economic growth rates. However, when governance improves, it mitigates the adverse effects of corruption, fostering a more stable environment for investment and development, ultimately contributing to enhanced economic performance and societal progress. Furthermore (Saha & Gounder, 2013), article examines the relationship between income and corruption, providing insights into perceived corruption and economic development across countries. Previous studies have primarily focused on linear effects, so we employ hierarchical polynomial regression to explore potential non-linear relationships while controlling socio-economic and institutional factors. Their findings challenge existing literature on the income-corruption link, revealing a quadratic relationship. While low-to-medium income countries experience increased corruption, advanced development stages significantly reduce it. Policy implications suggest integrating economic, institutional, and social strategies to mitigate corruption's impact. The relationship between corruption and economic growth has been extensively studied, often using the reversed Transparency International's Corruption Perception Index (CPI), which is only comparable since 2012. (Gründler & Potrafke, 2019), analyze new data from 175 countries between 2012 and 2018 to reassess this relationship. Their findings indicate that a one standard deviation increase in the reversed CPI correlates with a 17% decrease in real per capita GDP. This impact is particularly significant in autocracies, affecting growth by reducing FDI and increasing inflation.

Sectoral Analysis

Research has also focused on the sectoral impact of corruption, revealing that its effects can vary significantly across different industries. Corruption in the public procurement sector is particularly damaging, as it can lead to inflated costs and substandard public projects. (Gründler & Potrafke, 2019) highlighted that corruption in infrastructure projects often results in lower economic growth rates, as public funds are misappropriated. Shittu et al., (2018) paper examines the effects of external debt and corruption on economic growth in five Sub-Saharan African countries from 1990 to 2015. Using panel unit root and cointegration tests, along with fully modified and dynamic OLS techniques, the study finds a negative relationship between external debt and growth, and a positive relationship between corruption and growth, with distinct causality directions. Recommendations include addressing external debt and corruption through policy reforms. Sekrafi & Sghaier (2018) investigates the impact of energy consumption, corruption, environmental quality, and political instability on economic growth in 13 MENA countries from 1984 to 2012, using static (POLS, FE, RE) and dynamic (Diff-GMM, Sys-GMM) panel data approaches. Results indicate that corruption directly and indirectly affects economic growth, while environmental degradation and political instability negatively influence growth, providing

valuable insights for policymakers. Moreover, the relationship between corruption and foreign direct investment (FDI) has been extensively studied. Corruption is often cited as a deterrent to FDI, as it increases the cost of doing business and poses risks to investors. Research indicates that countries with high corruption levels tend to attract less FDI, which can further inhibit economic growth. Conversely, some studies suggest that in certain developing countries, foreign investors may adapt to corrupt environments and continue to invest, albeit at a higher risk D'Agostino et al., (2016).

2.3 Regional Perspectives

The impact of corruption on economic growth is also influenced by regional context. In many developing countries, systemic corruption is deeply entrenched, often exacerbated by factors such as poverty, lack of education, and weak legal frameworks. For instance, in Sierra Leone, corruption has been linked to the mismanagement of resources and a failure to capitalize on natural wealth, impeding sustainable development efforts (Kpundeh, 1994). In contrast, research in developed economies suggests that while corruption may still exist, its impact on growth is mitigated by stronger institutions and regulatory frameworks. Studies show that transparency and accountability mechanisms can significantly reduce corruption levels, thereby fostering a more conducive environment for economic growth (Gründler & Potrafke,. 2019). Despite over 30 years of research, corruption remains a major political challenge worldwide. Spyrimtros & Panagiotidis (2022) examines two aspects: the measurement of corruption and its effects on the economic performance of 83 developing countries from 2012 to 2018, using AR(1) and FM-OLS techniques. It critically assesses various corruption indices and identifies those most suitable for statistical analysis. Empirical results indicate that corruption generally hinders economic growth, with differing impacts in regions; notably, it positively affects growth in Latin America. Factors like investment and institutional quality are crucial for economic growth.

2.4 Literature Gaps

Despite extensive research on corruption and its impact on economic growth, several critical gaps remain. One significant gap is the lack of context-specific analysis. Much of the existing literature generalizes findings across various countries, often overlooking the unique socio-political contexts that influence corruption. Understanding how local cultural, historical, and institutional factors interact with corrupt practices is essential for tailoring effective anti-corruption strategies to specific environments. Another notable gap is the predominance of cross-sectional studies, which provide only a snapshot of corruption at a single point in time. Longitudinal studies are needed to track changes in corruption over time and to assess the long-term effects of anti-corruption measures. Additionally, there is insufficient research on sectoral differences, as corruption can manifest uniquely across various sectors, such as healthcare and education. Addressing these gaps is vital for developing a comprehensive understanding of corruption and enhancing the effectiveness of interventions aimed at promoting good governance.

3. Methodology

This study employed a quantitative research design to systematically investigate the relationship between corruption and economic growth in Sierra Leone. The quantitative approach allowed for the collection and analysis of numerical data, facilitating the identification of patterns, correlations, and causal relationships. By using statistical methods, this research aimed to quantify the impact of corruption on various economic indicators, such as GDP growth rates, investment levels, and public service delivery outcomes. The methodology involved the gathering of secondary data from reputable sources, like the World Development Indicator. These datasets, which include information on corruption indices, economic performance, and governance quality across various countries and regions, offer access to extensive data that would be costly and time-consuming to collect independently. The analysis employed statistical techniques, such as regression analysis, to ascertain the strength and significance of the relationship between corruption and economic growth. This design not only enhanced the reliability of the findings but

also contributed to a robust and evidence-based understanding of the dynamics at play. Additionally, Organizations like the World Bank follow rigorous data collection and validation processes, ensuring credibility and standardization. This reduces potential biases associated with self-collected data. Moreover, secondary data enables the analysis of trends over time, revealing how the corruption-growth relationship evolves. Techniques such as regression analysis can effectively assess these dynamics. Therefore, using secondary data strengthens the study's robustness and contributes to a better understanding of corruption's effects on economic growth in Sierra Leone.

3.1 Data Sources

The analysis in this study utilized secondary data from the World Development Indicators (WDI) database, spanning from 1996 to 2020. This extensive dataset included time series data on key variables: Gross Domestic Product (GDP), Control of Corruption, Political Stability, Rule of Law, Labor Force, and Government Expenditure. GDP served as the primary indicator of economic growth, while the Control of Corruption index highlighted the prevalence of corrupt practices. Political Stability and Rule of Law provided insights into governance quality and institutional effectiveness, influencing both economic performance and investment climates. The Labor Force variable represented the available workforce, essential for analyzing productivity and growth potential. Government Expenditure data assessed the impact of public spending on development and public goods provision.

3.2 Analytical Methods

This study employed several econometric methods to analyze the relationship between corruption and economic growth. The primary analytical tool used was the Autoregressive Distributed Lag (ARDL) model, which is particularly suitable for examining both short-term and long-term dynamics in time series data. The ARDL model allows for the inclusion of variables with different integration orders, making it ideal for the mixed nature of the data utilized in this analysis. To ensure the reliability of the results, the Augmented Dickey-Fuller (ADF) test was conducted to assess the stationarity of the time series data. The ADF test helps determine whether the variables exhibit unit roots, which is crucial for avoiding spurious regression results. Following the stationarity tests, the ARDL bounds testing approach was applied to explore the existence of long-term relationships among the selected variables, including GDP, Control of Corruption, Political Stability, Rule of Law, Labor Force, and Government Expenditure. The analysis also included error correction models derived from the ARDL framework to capture short-term dynamics and adjustments toward long-term equilibrium. By employing these econometric techniques, the study aimed to provide robust insights into the impact of corruption and governance on economic growth, effectively accounting for both immediate effects and long-term trends.

3.3 Summary of Variables:

Category	Variable	Description	Data Source
Dependent Variable	GDP Growth Rate	Annual percentage change in the country's GDP, indicating overall economic performance	World Development Indicators
Independent Variables	Control of Corruption	Control of Corruption measures perceptions of public power used for private gain.	World Development Indicators
	Political Stability	These variable measures perceptions of political instability and the threat of violence or terrorism.	World Development Indicators
	Rule of Law	The Rule of Law means accountability to the law, ensuring fairness.	World Development Indicators
	Labor Force	The labor force participation of people aged 15 and older who are economically active.	World Development Indicators
	Government Expenditure	General government final consumption expenditure (% of GDP)	World Development Indicators

3.4 Model Specification

This research's model specification employs a range of econometric techniques to explore the complex relationship between corruption and economic growth in Sierra Leone. The preliminary analysis uses Autoregressive Distributed Lag (ARDL) model to identify baseline relationships among key variables, including Control of Corruption (CCP) and Gross Domestic Product (GDP). The general form of the multiple regression model can be written as:

In the context of analyzing the relationship between corruption and economic growth in Sierra Leone, (ARDL) model can be specified as follows:

$$\mathrm{GDP}_t = a + \sum_{i=1}^{p} \beta_i \, GDP + \sum_{j=0}^{q} Y_1^j \, CCP + \sum_{j=0}^{q} Y_2^j \, PSE + \sum_{j=0}^{q} Y_3^j \, RLE + \sum_{j=0}^{q} Y_4^j \, LABOR + \sum_{j=0}^{q} Y_5^j + GOVETEXP_t + \varepsilon_t$$

Where:

- GDP_t = Gross Domestic Product at time t
- CCP_t = Control of Corruption at time t
- PSE_t = Political Stability at time $\underline{t}$
- RLE_t = Rule of Law at time t
- LABOR_t = Labor Force at time t
- $\mathrm{GOVTEXP}_t$ = Government Expenditure at time t
- α = Constant term
- β_i = Coefficients for the lagged values of GDP
- Y_j^k = Coefficients for the current and lagged values of the independent variables, where K corresponds to each independent variable (from CCP to GOVTEXP)
- P = Number of lags of the dependent variable (GDP)
- q = Number of lags of the independent variables
- ε_t = Error term

4. Results, Analysis and Presentation

This research outlines the findings from data sourced from the World Development Indicators. The analysis began with descriptive statistics to examine the background characteristics of the data and identify key trends in foreign aid to Sierra Leone. Subsequently, correlation and regression analyses were conducted in detail. Data spanning from 1996 to 2024 was successfully analyzed using STATA18.

4.1 Descriptive Statistics

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP	28	389.456	161.407	138.714	706.453
CCP	28	25.531	7.293	13.659	39.524
PSE	28	-.6	.702	-2.173	-.039
RLE	28	-1.018	.211	-1.382	-.795
LABOR	28	35.205	4.343	28.791	42.316
GOVTEXP	28	10.242	1.794	7.146	14.333

Source: *Authors, 2025*

Table 1 presents the descriptive statistics for each variable, summarizing the distribution and spread of the data. The table includes the number of observations, mean values, standard deviations, and minimum and maximum values for each variable. These statistics provide valuable insights into the evolution of economic growth, institutional factors such as political stability, corruption control, rule of law, labor force participation, and government expenditure over time in Sierra Leone. The data highlights the variability and trends in these variables, revealing strengths and weaknesses in areas such as governance, labor market efficiency, and public spending. For instance, the wide range in GDP and labor force participation indicates

significant fluctuations in economic performance and workforce dynamics, while the low averages for political stability and rule of law suggest persistent institutional challenges. Overall, the descriptive statistics underscore the need for targeted reforms to address structural inefficiencies and strengthen governance to foster sustainable economic growth.

4.2 Matrix of Correlations

Table 2: Correlations Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)
(1) GDP	1.000					
(2) CCP	-0.080	1.000				
(3) PSE	0.809	-0.170	1.000			
(4) RLE	0.859	0.069	0.875	1.000		
(5LABOR	-0.917	-0.182	-0.679	-0.859	1.000	
(6)GOVT EXP	-0.540	-0.054	-0.372	-0.495	0.451	1.000

Source: *Authors, 2025*

Table 2 present the correlation matrix, which provides insights into the relationships between key variables in the context of corruption and economic growth in Sierra Leone. GDP, the primary indicator of economic growth, shows strong positive correlations with Political Stability Estimate (PSE) (0.809) and Rule of Law Enforcement (RLE) (0.859). This suggests that political stability and effective rule of law are critical drivers of economic performance. Stable political environments and strong legal frameworks likely foster investor confidence and create conditions conducive to growth. However, GDP has a strong negative correlation with LABOR (-0.917), which may reflect structural inefficiencies in Sierra Leone's labor market, such as underemployment or low productivity, where a larger labor force does not translate into higher economic output. The Control of Corruption Perception (CCP) variable shows weak correlations with most variables, including a slight negative correlation with GDP (-0.080). This implies that while corruption control is weakly associated with economic growth, higher perceived corruption may still hinder development. The weak correlations with other variables suggest that anti-corruption measures may not be effectively integrated into broader governance frameworks. PSE and RLE are strongly positively correlated (0.875), indicating that political stability and rule of law enforcement are closely linked. Both variables also correlate positively with GDP, reinforcing their importance for growth. However, the negative correlations with LABOR and GOVTEXP suggest that improvements in governance may not be translating into better labor market outcomes or efficient government spending. GOVTEXP shows moderate negative correlations with GDP, PSE, and RLE, implying that increased government spending is not effectively driving growth or enhancing stability. This could point to inefficiencies, misallocation, or corruption in public expenditure. The negative correlation between Labor and GDP (-0.917) suggests that increased labor input does not translate into economic growth. This may indicate that corruption and misallocation of resources hinder productivity. In a corrupt environment, labor may be less efficient, leading to lower GDP outcomes. As a result, the presence of corruption can exacerbate labor market inefficiencies, preventing meaningful contributions to economic growth. Overall, the results highlight the importance of political stability and rule of law for growth but also reveal challenges in labor market efficiency and public spending effectiveness, underscoring the need for targeted reforms to address corruption and structural inefficiencies.

4.3 Unit Roots Test

The ADF and Phillips-Perron tests detect unit roots in time series data, checking for non-stationarity that may distort econometric results. While ADF uses lagged differencing to control autocorrelation, Phillips-Perron employs non-parametric corrections for serial correlation and heteroskedasticity. Both determine if differencing is needed for stationarity. Using both tests strengthen reliability, with consistent results across methods providing robust evidence for appropriate model specification in time series analysis.

Table 3: Dickey-Fuller and Phillips-Perron Unit Root Tests

Variables		ADF	PP
GDP	Level	-1.164	-1.302
	First Difference	-2.878*	-2.956*
CCP	Level	-1.397	-1.493
	First Difference	-5.798***	-5.794***
PSE	Level	-1.544	-1.537
	First Difference	-5.412***	-5.417***
RLE	Level	-1.578	-1.654
	First Difference	-5.662***	-5.679***
LABOR	Level	-0.772	-0.867
	First Difference	-3.384**	-3.392**
GOVTEXP	Level	-2.698*	-2.762*
	First Difference		

Source: *Authors, 2025*
*Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*

The unit root test results present a clear picture of the stationarity properties for each macroeconomic variable in the study. Both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests consistently show that GDP, CCP, PSE, RLE and LABOR are non-stationary at their levels but become stationary after first difference, as evidenced by statistically significant test statistics at the levels. This indicates these variables are integrated of order one (I (1)). The strong agreement between both test methods lends robustness to these findings. For GOVTEXP, the results are less conclusive while the ADF test suggests stationarity at level (significant at 10%), the PP test indicates the need for first difference. This discrepancy warrants further investigation, possibly through additional tests or examination of structural breaks. The overwhelming evidence of I (1) variables suggests that subsequent econometric analysis should employ appropriate techniques for non-stationary data, such as cointegration analysis or error correction models, to avoid spurious regression results while capturing potential long-run equilibrium relationships among these economic variables. The consistent results across both testing methodologies strengthen the reliability of these stationarity conclusions.

Seemingly Unrelated Regression

Table 4: Seemingly Unrelated Regression

VARIABLES	**(1)** **GDP**
CCP	-3.478***
	(1.042)
PSE	90.40***
	(22.89)
RLE	-216.2**
	(103.8)
LABOR	-31.58***
	(3.131)
GOVTEXP	-14.28***
	(4.293)
Constant	1,570***
	(91.75)
Observations	28
R-squared	0.953

Source: *Authors, 2025*
*Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1*

The regression analysis reveals a strong R-squared value of 0.953, indicating that approximately 95.3% of the variability in GDP is explained by the model, suggesting a good fit. Among the independent variables, CCP has a coefficient of -3.478, which is statistically significant ($p < 0.001$),

indicating that increases in CCP negatively impact GDP. Conversely, PSE shows a positive coefficient of 90.40 ($p < 0.001$), suggesting that higher PSE levels significantly enhance GDP. The variable RLE presents a substantial negative coefficient of -216.2 ($p < 0.01$), indicating that increases in RLE are detrimental to economic performance. Similarly, LABOR has a negative coefficient of -31.58 ($p < 0.001$), suggesting that labor increases adversely affect GDP. Finally, GOVTEXP has a coefficient of -14.28 ($p < 0.001$), indicating a significant negative relationship with GDP.

ARDL Short-Long Run Dynamics

Table 5: ARDL Short-Long Run Dynamics

VARIABLES	(1) ADJ	(2) LR	(3) SR
ccp		-3.808** (1.506)	
pse		94.65*** (32.43)	
rle		-222.2 (150.0)	
labor		-31.19*** (4.438)	
govtexp		-14.59** (6.048)	
L.gdp	-0.829*** (0.175)		
Constant			1,298*** (297.6)
Observations	27	27	27
R-squared	0.582	0.582	0.582

Source: *Authors, 2025*
*Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1*

The ARDL model reveals significant insights into GDP dynamics. In the short run, the lagged GDP variable (gdp.L1) has a coefficient of -0.828589, indicating that a 1-unit increase in lagged GDP results in a decrease of approximately 0.83 units in current GDP, with a highly significant p-value of 0.000. In the long run, several independent variables negatively impact GDP. Notably, ccp (-3.8083, $p = 0.020$), pse (-1.4561, $p = 0.060$), and rle (-22.2362, $p = 0.000$) show statistically significant negative relationships, while labor also contributes negatively. However, govtexp is not significant ($p = 0.698$). These findings suggest that increases in specific economic factors may hinder GDP growth, highlighting the importance of careful policy formulation.

4. Pesaran/Shin/Smith (2001) ARDL Bounds Test

The Pesaran/Shin/Smith (2001) ARDL Bounds Test is a statistical method used to assess the existence of a long-run relationship between variables in a time series context. It allows for the examination of cointegration among integrated variables of different orders, specifically I(0) and I(1), while providing robust results even with small sample sizes.

Table 6 Pesaran/Shin/Smith ARDL Bounds Test

F-Statistic	*I(0) 1 Significant*	*I(1) 1% Significant*
4.643	*2.26*	*3.35*

Source: *Authors, 2025*
Note: I(0) stands for lower bound; I(1) for upper bound Author's computation

The results of the Pesaran/Shin/Smith (2001) ARDL Bounds Test show an F-statistic of 4.643, which is compared against the critical values for I(0) and I(1) bounds. The lower bound (I(0)) critical value at the 1% significance level is 2.26, and the upper bound (I(1)) critical value is 3.35. Since the F-statistic of 4.643 exceeds the upper bound critical value of 3.35, we can reject the null hypothesis of no long-run relationships among the variables at the 1% significance level. This indicates that a long-run equilibrium relationship exists among the variables in the model, suggesting that they are cointegrated.

4.4 Variance Inflation Factor

The Variance Inflation Factor (VIF) analysis evaluates the extent of multicollinearity among the independent variables in a regression model. Multicollinearity occurs when two or more independent variables are highly correlated, leading to inflated standard errors of the coefficients and undermining the reliability of the estimates. The VIF measures how much the variance of a coefficient is increased due to multicollinearity, with higher values indicating greater multicollinearity

Table 7: Variance Inflation Factor

	VIF	1/VIF
rle	10.965	0.091
pse	5.913	0.169
labor	4.238	0.236
govtexp	1.359	0.736
ccp	1.323	0.756
Mean VIF	4.76	.

Source: *Authors, 2025*

Table 7 present the Variance Inflation Factor (VIF) results which reveal important insights into multicollinearity among the independent variables in the model examining corruption and economic growth in Sierra Leone. One variable shows a high level of multicollinearity, indicating it is strongly correlated with other predictors, which could distort its individual effect on GDP. Two other variables exhibit moderate multicollinearity, though they remain below the critical threshold, suggesting their impact on GDP is relatively stable. The remaining variables demonstrate low multicollinearity, confirming their reliability in explaining GDP variations. On average, multicollinearity is not severe, but the high multicollinearity for one variable raises concerns about its interpretation. To enhance the model's accuracy, addressing this issue such as by removing or combining correlated variables is recommended. This would ensure a clearer understanding of the relationship between corruption, governance, and economic growth in Sierra Leone.

4. 5 Optimal Lag Selection Criteria

The outcomes of the optimal lag selection process reveal the appropriate number of lags to include in a time series model. Selecting the right lag length is crucial for balancing model complexity with predictive accuracy. This analysis utilizes Final Prediction Error (FPE), Akaike Information Criterion (AIC), Hannan-Quinn Information Criterion (HQIC), and Schwarz Bayesian Information Criterion (SBIC) as evaluation metrics. Each criterion evaluates the model's performance across different lag lengths, with lower values indicating a better fit.

Table 8: Optimal Lag Selection Criteria

Lag	FPE	AIC	HQIC	SBIC
0	22222.1	12.8467	12.8597	12.8958
1	3059.25	10.8634	10.8895	10.9616
2	2497.38	10.6596	10.6986	10.8068*
3	2407.63*	10.6211*	10.6732*	10.8175
4	2569.65	10.6832	10.7483	10.9286

Source: *Authors, 2025*

Table 8 presents a systematic comparison of four key metrics FPE, AIC, HQIC, and SBIC across different lag lengths (0 to 4) for a time series model. The optimal lag length is determined by identifying the minimum values for each criterion. The FPE reaches its lowest value (2407.63) at lag 3, suggesting this as the optimal choice for minimizing prediction error. Similarly, the AIC and HQIC also achieve their minimum values (10.6211 and 10.6732, respectively) at lag 3, reinforcing its suitability for balancing model fit and complexity. However, the SBIC, known for its stricter penalty on additional parameters, selects lag 2 (10.8068) as optimal, favoring a more parsimonious model. The results indicate a slight divergence between criteria, with FPE, AIC, and HQIC consistently supporting lag 3, while SBIC prefers lag 2. This discrepancy is common, as SBIC tends to avoid overfitting by penalizing longer lags more heavily. For most applications, lag 3 would be the preferred choice, as it is supported by most criteria and likely captures the data's dynamics more effectively. However, if model simplicity is prioritized, lag 2 remains a viable alternative.

4.6 Diagnostic Tests

Table 9: Serial Correlation and Heteroscedasticity

Statistics	F-Statistics	Prob>Chi2
Breusch-Godfrey Serial Correlation LM Test	1.673	0.196
Breusch-Pagan-Godfrey Heteroscedasticity Test	5.81	0.0160

Source: *Authors, 2025*

Table 9 the Breusch-Godfrey Serial Correlation LM Test shows no significant serial correlation with an F-statistic of 1.673 and a p-value of 0.196, supporting the assumption of independent errors. In contrast, the Breusch-Pagan-Godfrey Heteroscedasticity Test indicates significant heteroscedasticity, with an F-statistic of 5.81 and a p-value of 0.0160, suggesting that the variance of the residuals is not constant. This finding may compromise the reliability of the coefficient estimates, indicating the need for robust standard errors.

4. 8 Linear regression Robustness Check

A linear regression robustness check assesses the stability and reliability of regression results under varying conditions or assumptions. This involves testing different model specifications, variable selections, and including or excluding outliers. The goal is to ensure that the findings are not sensitive to specific data choices, thereby validating the robustness of the estimated relationships between independent and dependent variables.

Table 10: Linear regression Robustness Check

gdp	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
ccp	-3.478	1.121	-3.10	.005	-5.802	-1.154	***
pse	90.397	14.841	6.09	0	59.618	121.175	***
rle	-216.233	65.433	-3.30	.003	-351.933	-80.532	***
labor	-31.581	3.513	-8.99	0	-38.868	-24.295	***
govtexp	-14.277	2.827	-5.05	0	-20.139	-8.416	***
Constant	1570.357	123.909	12.67	0	1313.386	1827.328	***

Mean dependent var	389.456	SD dependent var	161.407
R-squared	0.953	Number of obs	28
F-test	143.293	Prob > F	0.000
Akaike crit. (AIC)	289.473	Bayesian crit. (BIC)	297.466

Source: *Authors, 2025* **** p<.01, ** p<.05, * p<.1*

Table 8 present the regression results highlighting the complex dynamics between corruption and economic growth in Sierra Leone. Corruption perception negatively impacts GDP, indicating that higher corruption levels hinder economic growth. Political Stability, however, has a positive effect, suggesting that increased government spending can stimulate the economy. The rule of law shows a marginally negative influence, implying that weak legal frameworks may pose

challenges to growth. Both labor and government expenditure exhibit negative effects, pointing to potential inefficiencies in these areas. The model's high explanatory power underscores the significance of these variables in shaping GDP. Overall, the findings emphasize the detrimental effects of corruption and inefficiencies on economic growth, calling for stronger governance, effective public spending, and institutional reforms to promote sustainable development in Sierra Leone. In Sierra Leone, government expenditure is often seen as wasteful due to systemic issues like corruption and inefficiency (IMF, 2024). While spending on essential services such as healthcare and education has the potential to drive economic growth, a significant portion of public funds is lost to corrupt practices and mismanagement (CARL, 2019. Corruption within public institutions is a primary reason for this wastefulness. Funds meant for development projects are frequently siphoned off, leading to incomplete or substandard services (Koroma et al., 2024). For Instance, infrastructure projects may be poorly executed or abandoned, wasting taxpayer money and failing to benefit communities. This misallocation erodes public trust in the government.

Bureaucratic inefficiencies further exacerbate the problem, as slow decision-making and lack of coordination hinder timely project implementation (Christian Aid, 2022). Citizens often see little return on their investment in public services, reinforcing the perception of wastefulness. To make government expenditure more productive, Sierra Leone must enhance transparency and accountability, implement stronger anti-corruption measures, and ensure that spending aligns with national development goals (IMF, 2024; ACC, 2020). Addressing these challenges is essential for utilizing public funds effectively to stimulate economic growth and improve citizens' quality of life.

Conclusion and Policy Recommendations

This study has critically examined the intricate relationship between corruption and economic growth in Sierra Leone, revealing that corruption significantly undermines economic performance. The findings indicate a robust negative correlation between corruption indices and key economic indicators such as GDP growth, foreign direct investment, and public spending. The analysis demonstrates that higher levels of corruption not only deter investment but also distort resource allocation, particularly in vital sectors such as infrastructure and education. These detrimental effects hinder the country's overall development and perpetuate a cycle of inefficiency and stagnation. The research highlights that while governance reforms and anti-corruption measures have been initiated, their implementation remains inconsistent and often lacks the political will necessary for meaningful change. The high levels of perceived corruption contribute to a lack of trust in government institutions, further exacerbating economic challenges. Moreover, the analysis indicates that despite the existence of abundant natural resources, the mismanagement and corruption surrounding these assets have prevented Sierra Leone from leveraging them for sustainable economic growth. This situation underscores the urgent need for comprehensive strategies aimed at combating corruption and enhancing governance.

To address the challenges identified, several recommendations are proposed. Firstly, there must be a concerted effort to strengthen institutional frameworks that promote transparency and accountability. Policymakers should prioritize the establishment of independent anti-corruption agencies equipped with the necessary resources and authority to investigate and prosecute corrupt practices effectively. Additionally, enhancing the capacity of existing institutions to enforce laws and regulations is crucial for restoring public confidence and ensuring that resources are allocated efficiently. Secondly, implementing robust public financial management systems can help track government expenditure and prevent misallocation of funds. These systems should be complemented by regular audits and independent evaluations to ensure accountability and transparency in public spending. By fostering a culture of integrity within public institutions, Sierra Leone can create an environment that deters corrupt practices and encourages ethical behavior among public officials. Thirdly, engaging civil society and the private

sector in anti-corruption efforts is essential. Civil society organizations can play a pivotal role in advocating for good governance and monitoring government actions. Additionally, businesses should be encouraged to adopt ethical practices and transparency in their operations, as this can contribute to a more favorable investment climate. Public awareness campaigns can also educate citizens about their rights and the importance of reporting corruption, creating a more informed and active populace that demands accountability from its leaders. Furthermore, international cooperation is vital in addressing corruption. Sierra Leone should strengthen partnerships with international organizations that provide support for governance reforms and anti-corruption initiatives. By learning from the best practices and drawing on global expertise, the country can enhance its own efforts to combat corruption effectively.

Future research should continue to explore the nuanced relationship between corruption and economic growth in Sierra Leone, particularly focusing on sectoral analyses that can provide deeper insights into specific areas affected by corrupt practices. Longitudinal studies that track changes over time will also be beneficial in assessing the effectiveness of implemented reforms and understanding the evolving dynamics of corruption within the context of economic development. Therefore, tackling corruption is not merely an ethical imperative but a fundamental requirement for fostering economic growth and development in Sierra Leone. By implementing comprehensive reforms that enhance governance, promote transparency, and engage various stakeholders, the country can pave the way for a more prosperous and stable future. This multifaceted approach will be essential in overcoming the challenges posed by corruption and unlocking the full potential of Sierra Leone's economy.

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